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(54) A WINE BOTTLE HOLDER

(71) I, NICOS MICHAEL KKAIS ELEFTHERIOU, a British subject of "Oaklands", Holyoake Avenue, Bingley, Yorkshire, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a holder suitable for holding wine bottles.

It is a problem with storing wine in bottles in a rack that the wine is not always at the optimum temperature for serving when serving is required. This may be the case where wine is stored in a rack in a restaurant and the temperature of the atmosphere in the restaurant is not always at the correct temperature for serving the wine. For example, most experts agree that red wines ought to be served at room temperature. My opinion is that this means in the range 65° to 75°F. When the restaurant is closed and unheated the atmospheric temperature in the restaurant, where the wine is stored in the rack, could well be below this range. When the restaurant is heated in preparation for serving customers, the bottled wine will not warm-up as rapidly as the air surrounding it. Thus, even though the temperature in the restaurant may be in the range 65° to 75°F it is quite possible, particularly in the first few hours of the restaurant being open, that the wine stored in the restaurant is cooler than the room temperature. Also, it is possible that the temperature in the restaurant may never even attain the desired range.

It is alternatively possible that bottled red wine may be permanently stored in and served directly from an unheated part of the restaurant building, in which case it is particularly desirable to heat the wine prior to its being served.

In addition to wine being too cool on serving, it is of course also a problem that certain wines may be too warm. Bottles of this wine which are kept on a rack in a

restaurant where the temperature is in the seventies will obviously be too warm when they are served. 50

According to the invention there is provided a holder suitable for holding wine bottles and comprising means forming space or spaces to receive a plurality of wine bottles, heating and/or cooling means arranged for heating and/or cooling said bottles, a thermometer adapted for insertion through the neck of a bottle for submersion in liquid in a bottle in said space or one or said spaces, and a controller coupled to said thermometer for regulating the heating and/or cooling means in dependence upon the temperature sensed by the thermometer when the holder is in use. 55 60 65

Preferably the heating and/or cooling means and the controller will be operating for twenty-four hours a day to keep the wine always at its optimum temperature. 70

Since the thermometer will be submerged in liquid in a bottle when the holder is in use, the temperature it senses will be that of the liquid itself as opposed to the temperature of the atmosphere surrounding the bottle or even of any air which may be in the bottle with the liquid. 75

A holder according to the invention may be sold with or without the bottle in which the thermometer is to be immersed, since it would be an easy matter for the person who is to use the holder to provide such a bottle for himself. 80

A holder according to the invention may be built-up as a permanent feature of a building such as a restaurant, or it may be supplied as a constructed unit ready for setting up or installation. 85

It is to be understood that cooling means which are particularly effective could even be used to keep certain wines in a chilled condition. 90

For a better understanding of the invention and to show how the same may be carried into effect reference will now be made, by way of example, to the accompanying drawings, in which: 95

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Figure 1 shows a front view of a wine bottle holder according to the invention in the form of a rack;

Figure 2 shows a side view, in section, of one space of the wine bottle rack of Figure 1; and

Figure 3 shows a perspective view of a wine bottle holder according to the invention in the form of a refrigerated cabinet containing a rack.

Figure 1 shows a wine bottle rack comprising a plurality of wine bottle spaces provided by tubes 1 of earthenware material. The tubes 1 are set into a cement panel 2 which extends from floor to ceiling as a permanent built-up fixture providing a useful and also decorative wall panel in the dining room of a restaurant.

One of the tubes 1 holds a wine bottle 3 which, to avoid wasting wine, is full of water and also contains a thermometer 4 which is completely immersed in the water and which is coupled to a thermostat 5 mounted on one side of the wine bottle rack. The thermostat 5 controls the electric power supplied to a heating wire 6 which extends from the thermostat 5 and is wound round each tube 1 in succession before returning to the thermostat 5. There are equal numbers of turns of the heating wire 6 around all the tubes 1 so that the interiors of the tubes 1 will be heated equally. In addition, one strand of the heating wire 6 extends across the rear end of each tube 1.

Figure 2 shows in cross-section that tube 1 which holds the bottle 3. Electrical connections for the thermometer 4 extend through a hole in the cork of the bottle 3. The heating wire 6 is shown to be wound around the tube 1 and to extend once across the lower end of the tube 1. All the tubes 1 slant downwardly in the manner shown to prevent the bottles sliding out, and have their bottom ends blocked off by a backing board 7 which lies behind the cement panel 2 and extends across the whole extent of the wine rack.

The heating effect of the wine rack is provided by the thermostat 5 being permanently supplied with electricity and permanently operating to regulate the electric power it supplies to the heating wire 6. The water in the bottle 3 is thereby maintained at a temperature in the range 60° to 75°F which is preset on the thermostat 5, the actual temperature of the water being sensed by the thermometer 4 and being transmitted to the thermostat 5 in the form of an electrical signal for use in the electric power regulation to maintain the temperature of the contents of the bottles in the rack at the desired level. Both the thermometer 4 and the thermostat 5 are commercially available units. Since the heating wire 6 has an equal number of turns on all

the tubes 1 the heating effect of the wire 6 on the interiors of all the tubes 1 is the same and therefore all bottles held in the rack will contain liquid at the same temperature.

In order for the proprietor to check that the wine temperature is correct, another bottle full of water may be held in another of the tubes 1. In this case the glass of the bottle is clear and the bottle contains an immersed mercury thermometer. This provides a visual check that the apparatus is functioning correctly, and can be moved from one tube 1 to another to check that the heating effect is equal all over the rack.

Figure 3 shows a refrigerated cabinet 7a incorporating a wine bottle rack 8. This embodiment of the invention can be used to keep wine cool or to chill wine. Normally I would keep white wines and rosé at a temperature in the range approximately 38°F to 50°F.

The cabinet 7a is of the type used conventionally to store and display food which must be kept cool, for example dairy products, in shops and supermarkets. Conventionally the cabinet contains shelves for food on display. I have adapted the cabinet 7a by removing all the shelves except a bottom shelf 9, and by installing a wine bottle rack 8. The rack 8 consists of three grids of plastic-coated wire joined together by spacers. Of this assembly only the front grid has been shown for the sake of clarity. The three grids are aligned one behind another and provide holes such as 10 to receive wine bottles substantially horizontally. It is advantageous for the grids to be so aligned that the bottles will slant slightly downwards towards the back of the cabinet 7a to prevent them sliding forwardly out of the cabinet.

The bottom shelf 9 is provided for bottles which cannot fit into the holes 10, such as the bottle of a popular type of rosé wine.

The mode of refrigeration of the cabinet 7a is conventional for such cabinets when used for food displays, in that a refrigeration unit is housed in the base 11 of the cabinet and a fan is provided internally in a lower part 12 of the cabinet 7a to distribute cold air to the display area of the cabinet 7a, thereby to keep it at a uniform low temperature throughout. This cold air enters the display area via ducting to perforations in the rear wall 13 of the display area, and also via ducting in the form of a cold air curtain blown down from the front of the canopy 14 to protect the wine rack from the probably warm environment outside the cabinet 7a. The open grid-like nature of the wine bottle rack 8 allows cold air to circulate freely around the wine bottles.

An evaporative drip-pan 15 is provided which catches condensation dripping from the bottles. The drip pan 15 incorporates a

heater controlled by a water level sensor to re-evaporate the liquid in the drip pan 15, when it reaches a certain level.

I have mentioned merely briefly and without illustration the conventional internal operating parts and mechanisms of the cabinet 7a because the details thereof will be readily apparent to a man skilled in the art of refrigerated display.

The refrigeration unit in the base 11 is thermostatically controlled in dependence upon a thermometer in a bottle in the rack 8. This arrangement is not specifically shown but corresponds to that utilised for thermostatically controlling the temperature in the wine rack shown in Figures 1 and 2.

Of course there are alternative ways of carrying my invention into effect.

Instead of employing electric wire to heat the wine bottles, copper tubes carrying hot water or steam could be employed. These tubes could be straight tubes and could extend in a cabinet in which an open grid-like wine bottle rack is installed, such as the wine bottle rack 8 shown in Figure 3. The open construction of this type of rack would allow air warmed by the tubes to circulate around the bottles. Also cold water could be circulated through the tubes to cool the wine bottles, although the cold air type of cabinet shown in Figure 3 has proved more efficient for cooling wine bottles.

Instead of a conventional refrigeration unit to cool the bottles, a system for blowing compressed air on the bottles could be provided.

It would be possible of course to provide both heating means and cooling means in the same rack. One portion of the rack could be provided exclusively with heating means and another portion exclusively with cooling means. Alternatively, all spaces 1 could be provided with both heating means and cooling means for operation selectively, one or the other.

In addition, the heating or cooling facilities could be restricted to merely a portion of a rack so that the remainder of the rack could be used to store bottles the temperature of the contents of which is not critical.

WHAT I CLAIM IS:—

1. A holder suitable for holding wine bottles and comprising means forming space or spaces to receive a plurality of wine bottles, heating and/or cooling means arranged for heating and/or cooling said

bottles, a thermometer adapted for insertion through the neck of a bottle for submersion in liquid in a bottle in said space or one of said spaces, and a controller coupled to said thermometer for regulating the heating and/or cooling means in dependence upon the temperature sensed by the thermometer when the holder is in use.

2. A holder according to claim 1, wherein the heating means comprises electrical wires disposed so as to heat wine bottles in the holder when the holder is in use with current passing along the wires.

3. A holder according to claim 2, wherein said electrical wires extend around tubes for receiving the wine bottles.

4. A holder according to claim 3, wherein said tubes are earthenware tubes set in a cement panel.

5. A holder according to claim 1, wherein the heating means comprises thermally conductive tubes disposed to heat wine bottles in the holder when the holder is in use with hot water or steam passing along the tubes.

6. A holder according to any one of the preceding claims, wherein the cooling means comprises a refrigeration plant.

7. A holder according to claim 6, wherein the cooling means comprises a fan for blowing cold air onto wine bottles when the holder is in use.

8. A holder according to claim 7, wherein the cooling means comprises ducting for providing a cold air curtain between the wine bottles and the environment in which the holder is located.

9. A holder according to claim 6, 7 or 8, comprising a drip tray with heating means for evaporating accumulated drips.

10. A holder according to any one of the preceding claims, which is in the form of a cabinet containing a wine rack.

11. A holder suitable for holding wine bottles, substantially as hereinbefore described with reference to Figures 1 and 2 of the accompanying drawings.

12. A holder suitable for holding wine bottles, substantially as hereinbefore described with reference to Figure 3 of the accompanying drawings.

13. A holder according to any one of the preceding claims, and comprising a bottle in said space or one of said spaces in which bottle is disposed said thermometer.

14. A holder according to claim 13, wherein there is liquid in said bottle, in which liquid the thermometer is immersed.

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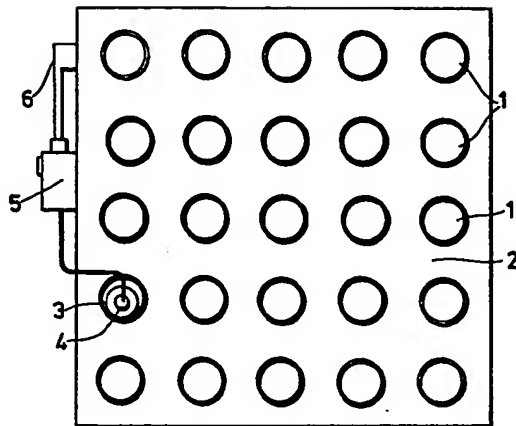
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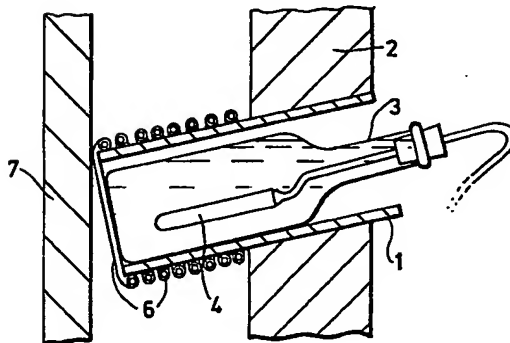
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--FIG. 1--



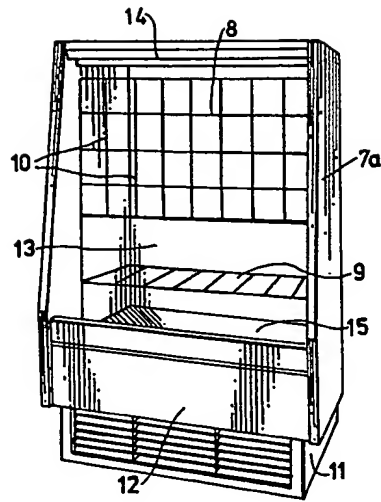
--FIG. 2--

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COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of
the Original on a reduced scale
Sheet 2



—FIG. 3.—